Claims

1. A substantially pure polypeptide having at least 95% sequence identity to the amino acid sequence of the myosin phosphatase-Rho interacting protein (M-RIP of SEQ ID NO: 1).

2. The polypeptide of claim 1, wherein said polypeptide is a human M-RIP protein.

3. The polypeptide of claim 1, wherein said polypeptide has the amino acid sequence of SEQ ID NO: 1.

4. The polypeptide of claim 1, wherein said polypeptide binds myosin phosphatase, RhoA, or both.

5. A substantially pure nucleic acid molecule having at least 90% sequence identity to the nucleic acid sequence of the M-RIP polynucleotide of SEQ ID NO: 19.

6. The nucleic acid molecule of claim 5, wherein said nucleic acid encodes a human M-RIP protein.

7. The nucleic acid molecule of claim 5, wherein said nucleic acid has the nucleic sequence of SEQ ID NO: 19.

8. The nucleic acid molecule of claim 5, wherein said nucleic acid encodes a polypeptide having the amino acid sequence of SEQ ID NO: 1.

9. The nucleic acid molecule of claim 5, wherein said nucleic acid encodes

a polypeptide that binds myosin phosphatsase, RhoA, or both.

10. A method for identifying a candidate compound for treating, reducing, or preventing hypertension or a hypertensive condition in a mammal, said method comprising:

(a) contacting a cell expressing an M-RIP gene with a candidate compound and

(b) measuring M-RIP gene expression or M-RIP protein activity in said cell, a candidate compound that decreases said expression or said activity, relative to M-RIP expression or activity in a cell not contacted with said candidate compound, identifying said candidate compound as a candidate compound useful for treating, reducing, or preventing hypertension or a hypertensive condition in a mammal.

11. The method of claim 10, wherein said candidate compound reduces binding of M-RIP to myosin phosphatase, RhoA, or both.

12. The method of claim 10, wherein said M-RIP gene is an M-RIP fusion gene.

13. The method of claim 10, wherein step (b) comprises measuring expression of M-RIP mRNA or protein.

14. The method of claim 10, wherein said cell is a mammalian cell.

15. The method of claim 14, wherein said cell is a rodent cell.

16. A method for identifying a candidate compound for treating, reducing, or preventing hypertension or a hypertensive condition in a mammal, said method

comprising:

(a) contacting an M-RIP protein with a candidate compound; and

(b) determining whether said candidate compound binds said M-RIP protein, a candidate compound that binds said M-RIP protein and decreases the activity of M-RIP being a candidate compound useful for treating, reducing, or preventing hypertension or a hypertensive condition.

17. The method of claim 16, wherein said agent reduces binding of M-RIP to myosin phosphatase, RhoA, or both.

18. The method of claim 16, wherein said M-RIP protein is human M-RIP protein.

19. A method for identifying a candidate compound for treating, reducing, or preventing hypertension or a hypertensive condition in a mammal, said method comprising:

(b) contacting an M-RIP protein with a candidate compound; and

(b) determining whether said candidate compound binds said M-RIP protein, a candidate compound that decreases binding of M-RIP to myosin phoshphatase, RhoA, or both being a candidate compound useful for treating, reducing, or preventing hypertension or a hypertensive condition.

20. The method of claim 19, wherein said M-RIP protein is human M-RIP protein.

21. A method for treating, reducing, or preventing hypertension or a hypertensive condition in a mammal, said method comprising administering to said mammal a therapeutically effective amount of an agent that reduces the level or activity of M-RIP in said mammal.

22. The method of claim 21, wherein said agent reduces the binding of M-RIP to myosin phosphatase, RhoA, or both.

23. The method of claim 21, wherein said hypertensive condition is a cardiovascular condition, a cerebrovascular condition, or a renal condition.

24. The method of claim 23, wherein said cardiavascular condition is angina pectoris, ischemic heart disease, cardiac hypertrophy, myocardial infarction, coronary artery disease, congestive heart failure, vascular injury, blood vessel spasm, myocardial ischemia, or aortic aneurysm.

25. The method of claim 23, wherein said cerebrovascular condition is cerebral infarction, cerebral hemorrhage, brain damage, loss of vision, or subarachnoid hemorrhage.

26. The method of claim 23, wherein said renal condition is progressive renal failure, or end-stage renal disease.

27. The method of claim 21, wherein said agent reduces the level, activity, or both of M-RIP by at least 10% relative to an untreated control.

28. The method of claim 27, wherein said agent reduces the level, activity, or both of M-RIP by at least 30% relative to an untreated control.

29. The method of claim 21, further comprising a second therapeutic regimen.

30. The method of claim 29, wherein said second therapeutic regimen

comprises low-fat diet, low-sodium diet, stress management, physical exercise, reduction in alcohol intake, or reduction in smoking.

31. The method of claim 29, wherein said second therapeutic regimen is a therapeutic agent selected from the group consisting of a diuretic, beta blocker, sympathetic nerve inhibitor, vasodilator, angiotensin converting enzyme inhibitor, angiotensin II receptor blocker, or a calcium channel blocker.

32. The method of claim 21, wherein said mammal is a human.

33. The method of claim 21, wherein said agent is selected from the group consisting of an RNAi, small molecule, antisense RNA, or dominant negative protein.

34. A kit comprising:

(a) an agent that reduces the level or activity of M-RIP; and

(b) instructions for delivery of said agent to a mammal for treating, reducing, or preventing hypertension or a hypertensive condition.

35. The kit of claim 34, wherein said agent reduces binding of M-RIP to myosin phosphatase, RhoA, or both.